



TEST REPORT

APPLICANT : Shenzhen Root Innovation Technology Co.,Ltd.
PRODUCT NAME : 2.4G Antenna
MODEL NAME : BP223
TRADE NAME : N/A
BRAND NAME : N/A
STANDARD(S) : IEEE Std 149-2021
RECEIPT DATE : 2024-04-18
TEST DATE : 2024-04-18
ISSUE DATE : 2024-04-24



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Change History		
Version	Date	Reason for change
1.0	2024-04-24	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Shenzhen Root Innovation Technology Co.,Ltd.
Applicant Address:	#2-201, Floor 2, Hasee Computer Building, No.2 Beier Rd, Bantian Street, Longgang, Shenzhen, Guangdong, China, 518129
Manufacturer:	Shenzhen Root Innovation Technology Co.,Ltd.
Manufacturer Address:	#2-201, Floor 2, Hasee Computer Building, No.2 Beier Rd, Bantian Street, Longgang, Shenzhen, Guangdong, China, 518129

1.2. Equipment Under Test (EUT) Description

Wireless Type	Bluetooth
Frequency	2400MHz-2500MHz
IMEI	N/A
Sample No.	1#



2. Test Results

2.1. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	IEEE Std 149-2021	IEEE Recommended Practice for Antenna Measurements

2.2. Test Conditions

Test Environment Conditions:

Relative Humidity(%):	25 - 75
Temperature(°C):	10 - 30

2.3. Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in Measurement” (GUM) published by ISO. When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% Confidence intervals.

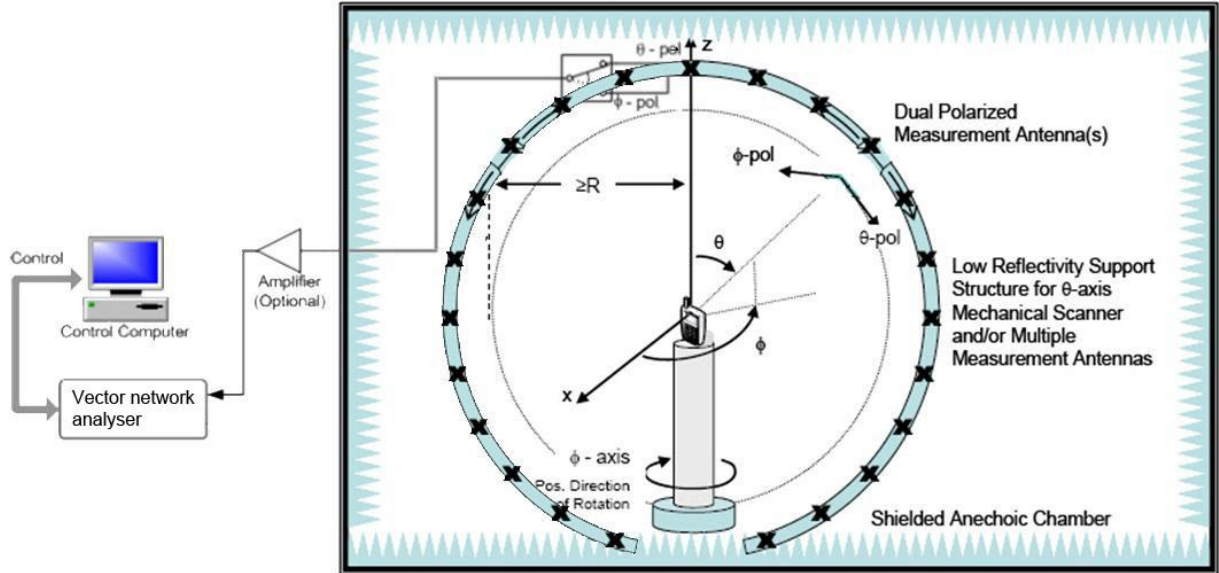


2.4. Test Results lists

2.4.1. Gain

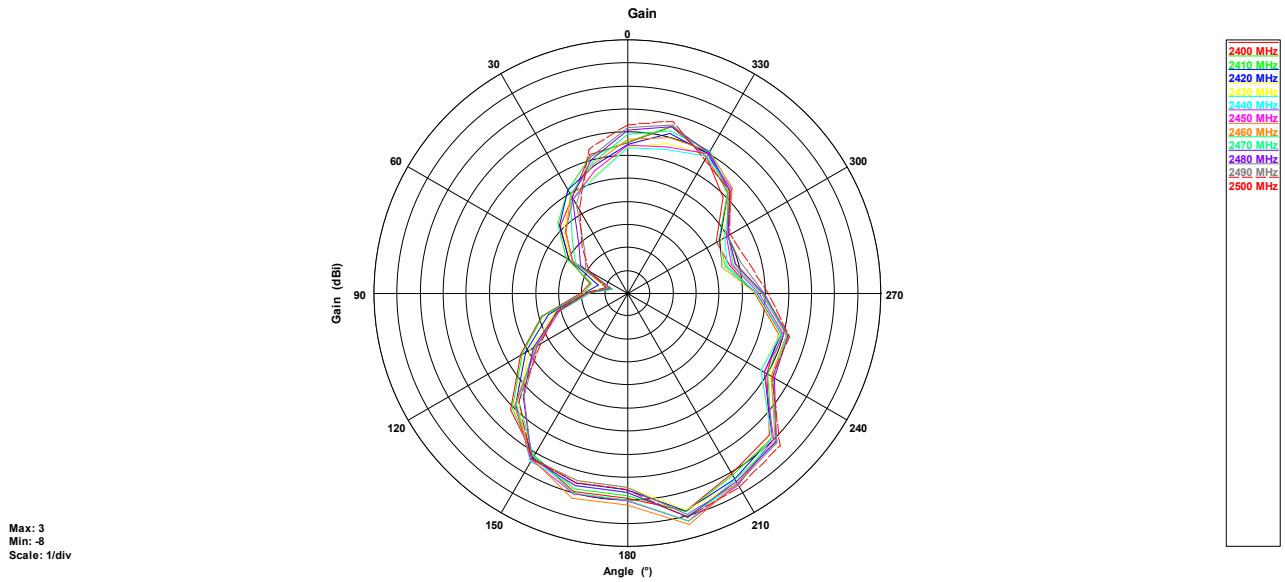
Frequency (MHz)	Gain(dBi)
2400	2.35
2410	2.39
2420	2.26
2430	2.16
2440	2.32
2450	2.54
2460	2.66
2470	2.53
2480	2.36
2490	2.22
2500	2.29

Annex A Test Setup Photos

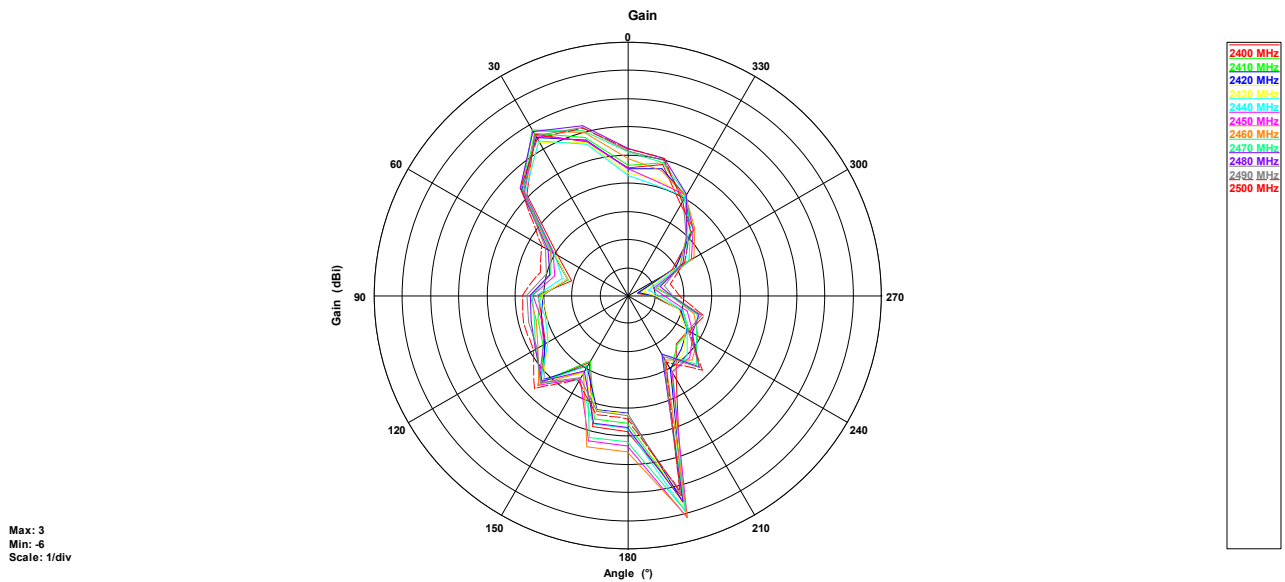


Annex B Figures

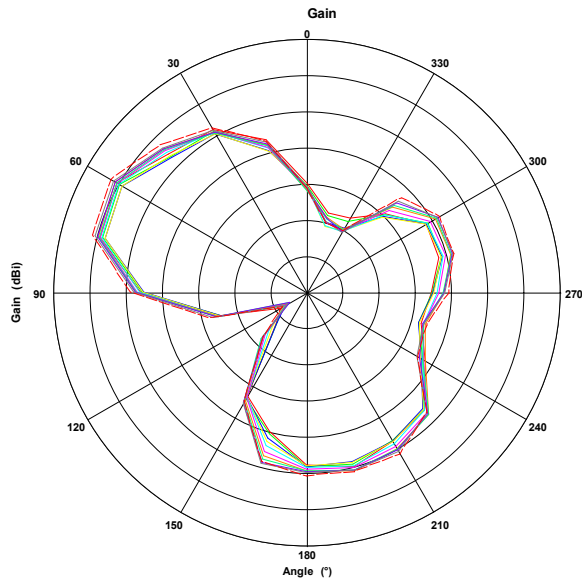
1. 2D Radiation Pattern



Phi=0°



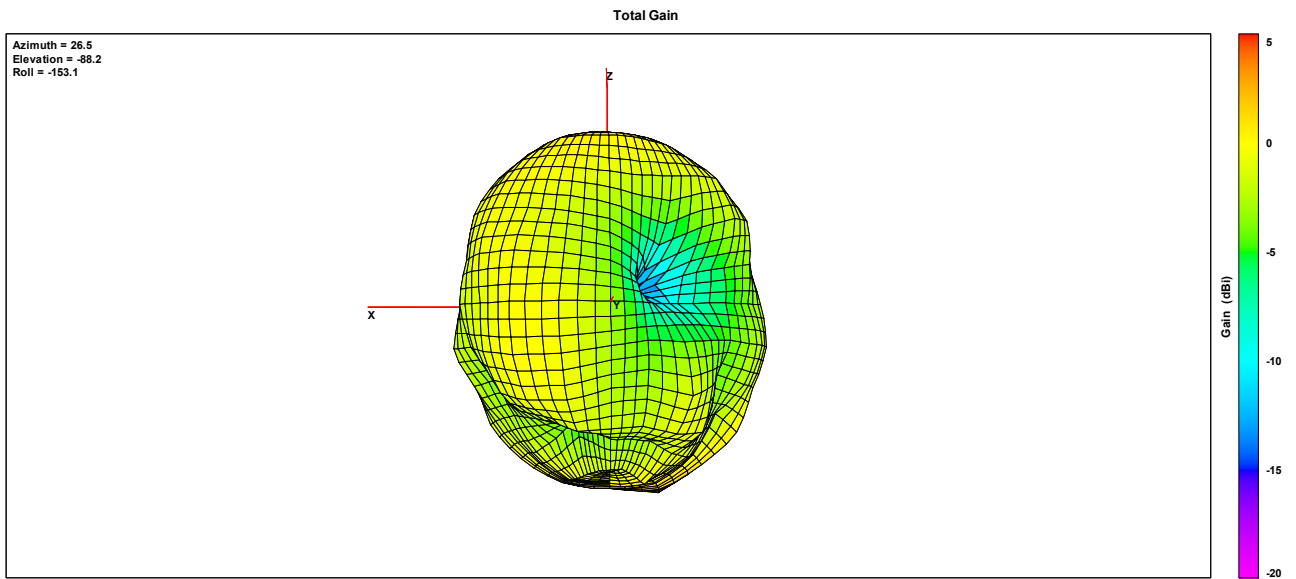
Phi=90°



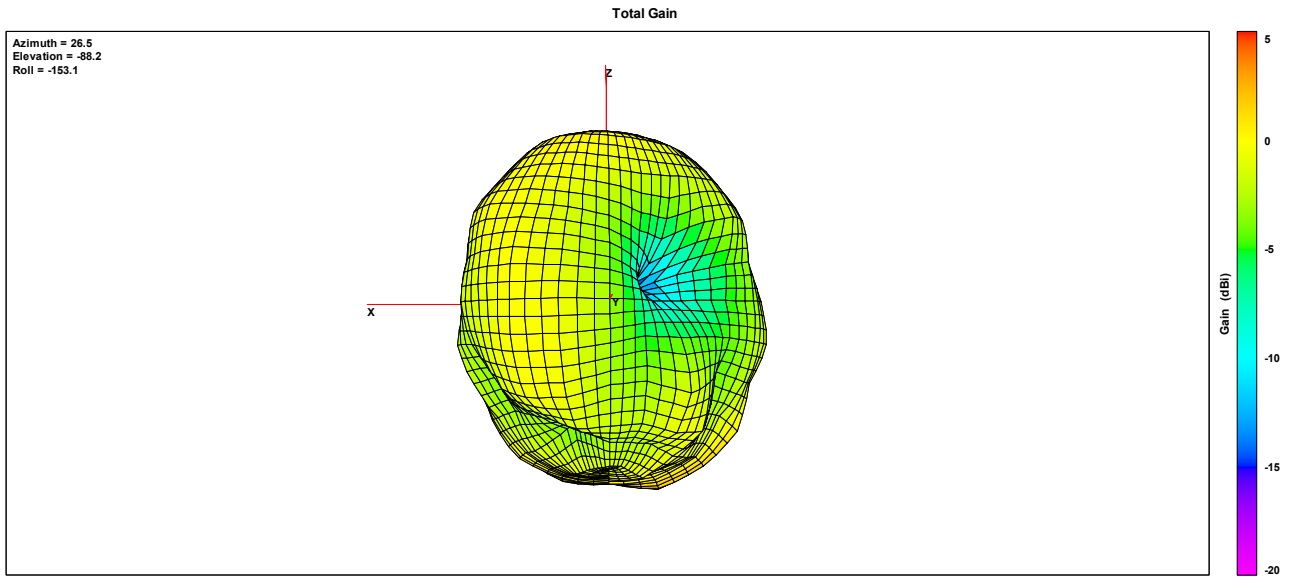
Max: 2
Min: -12
Scale: 2/div

Theta=90°

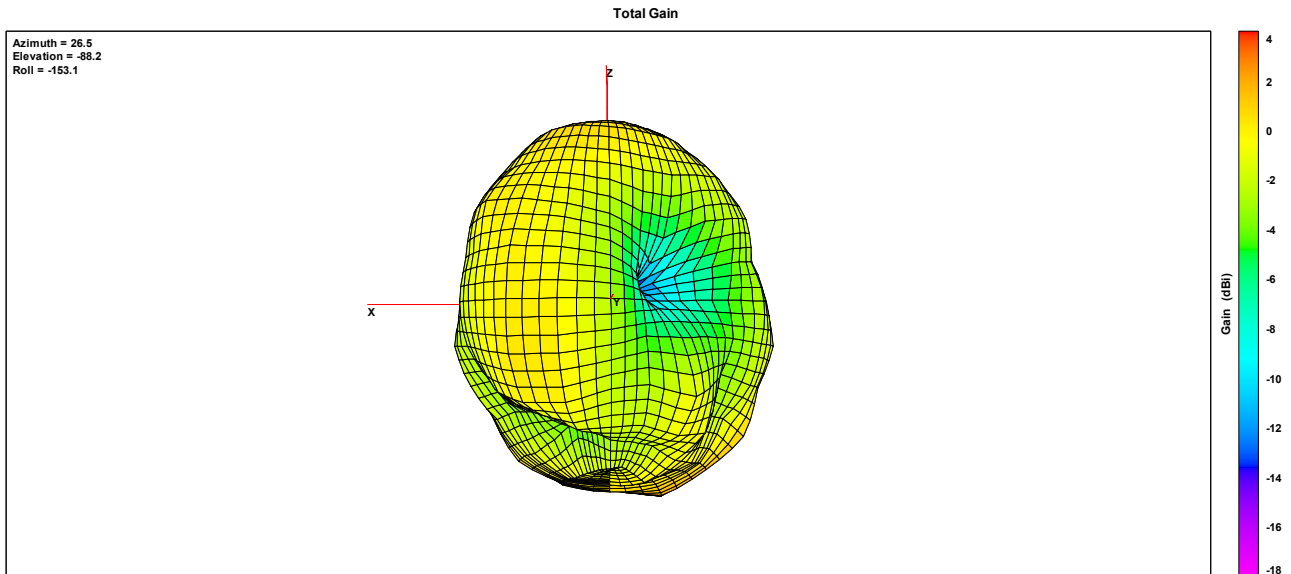
2. 3D Radiation Pattern



2400MHz



2440MHz



2480MHz



Annex C General Information

1.1 Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , Guangdong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

1.2 Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , Guangdong Province, P. R. China

1.3 Test Equipments Utilized

No.	Equipement Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Network Analyzer	MY46110140	E5071C	Agilent	2023.06.21	2024.06.20
2	OTA Chamber	TJ2235-Q1793	AMS-8923 -150	ETS	2022.11.30	2025.11.29

1.4 Test Software Utilized

No.	Software Name	Serial No.	Version	Manufacturer
1	Antenna Measurement System	1685	EMQuest EMQ-100 V 1.13 Build 21267	ETS

Note:The Main report is end here and the other Annex D will be submitted separately.

————— END OF MIAN REPORT —————